

FORMING A TRENCH TO DEFINE ONE OR MORE ISOLATION
REGIONS IN A SEMICONDUCTOR STRUCTURE

ABSTRACT

5 In one embodiment, a method for forming a semiconductor structure in
manufacturing a semiconductor device includes providing a pad layer on a surface of
a substrate, providing a nitride layer on the pad layer, and providing a sacrificial oxide
layer on the nitride layer. In a first etching step, at least the sacrificial oxide and
nitride layers are etched to define opposing substantially vertical surfaces of at least
10 the sacrificial oxide and nitride layers. In a second etching step, the nitride layer is
etched such that the opposing substantially vertical surfaces of the nitride layer are
recessed from the opposing substantially vertical surfaces of the sacrificial oxide
layer, the sacrificial oxide layer substantially preventing the nitride layer from
decreasing in thickness as a result of the etching of the nitride layer. In a third etching
15 step, the substrate is etched to form a trench extending into the substrate for purposes
of defining one or more isolation regions adjacent the trench.